## Space Weather Forecast

Issued on Thursday, 24 March 2022 at 00:44 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Chance of slightly elevated geomagnetic activity today and Sunday. Otherwise, mainly Quiet.**
**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has risen slightly over the past 24 hours, with occasional small common-class flares observed. The strongest of these very minor flares appeared to emanate from a large and potentially magnetically complex sunspot region, that rotated onto the northeast limb. There is also one other small, stable and relatively simple, sunspot on the visible disc. No Earth-directed Coronal Mass Ejections (CMEs) were observed in the last 24 hours.
**Solar Wind / Geomagnetic Activity:** The solar wind was slightly elevated for much of the period, with a few transient features running through but these did not amount to any significant geomagnetic activity. As a result, it remained mainly Quiet (Kp1-2).

**Energetic Particles / Solar Radiation:** Solar radiation in the near-Earth environment was at background levels.

**Four-Day Space Weather Forecast Summary**
**Solar Activity:** There is currently a 70% likelihood of further Common class flares, a combination of both AR2974 and AR2975, and a slight chance (15%) of isolated Moderate class flares from AR2975. Further regions are also expected to rotate onto the visible disc over the next four days.
**Solar Wind / Geomagnetic Activity:** There is one possible weak Earth-directed CME in the forecast, potentially giving Earth a glancing blow around the middle of today (24 March). There is also a possibility of a slightly enhanced solar wind arriving as well today. Separately, these events are not likely to be significant, but will encourage geomagnetic activity, perhaps reaching Active today and then a decreasing trend tomorrow (25 March). Day 4 (27th) a new enhanced in the solar wind is expected to arrive. Geomagnetic activity is expected to be mostly Quiet to Unsettled, with a chance of isolated Active periods today and day 4 (27th).
**Energetic Particles / Solar Radiation:** Solar radiation levels should remain at background levels throughout the four day period.

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# Met Office Space Weather Forecast

**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 10 | 5 | 5 | 20 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 15 | 15 | 15 | 15 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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